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| 10/823,758      | 04/14/2004  | Jin-Shou Fang        | OP-093000142        | 5063             |

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11/03/2006

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| EXAMINER |
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GUHARAY, KARABI

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| ART UNIT | PAPER NUMBER |
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2879

DATE MAILED: 11/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/823,758

Applicant(s)

FANG, JIN-SHOU

Examiner

Karabi Guharay

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Amendment, filed on 18 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7,9-11 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-11,13-15 and 17 is/are rejected.
- 7) ☒ Claim(s) 16, 18 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Amendment***

Amendment, filed on 18 July 2006 has been considered and entered.

Claims 8 & 12 are canceled. New claims 18-19 are added.

Claims 1, 2, 4-5, 9-11 & 13-17 are amended. Currently claims 1-7, 9-11, 13-19 are pending.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6-7, 11, & 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Danroc et al. (US 5828162).

Regarding claims 1 & 15, Danroc discloses a field emission display (Fig 2-5), comprising an anode electrode layer (16) having at least one anode (22) thereon; a cathode electrode layer (4) having at least one cathode (12) formed thereon wherein the cathode is aligned with anode and a gate conductive layer (8) disposed between the anode electrode layer and the cathode electrode layer, the gate conductive layer having at least one aperture (10) aligned with cathode and anode, wherein the cathode includes a first cathode conductive layer (12) in a shape of semi-spherical lump thus a protruding center of the first cathode conductive layer gradually descends towards a periphery thereof, and a second cathode conductive layer (36 of Fig 5) formed on the top of central region of the first cathode conductive layer (12) thereby the cathode is so

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configured that beeline between all surface points and the conductive layer are identical or having a protruding center gradually descending towards a periphery of the cathode electrode (see Fig 3-5, line 66 of column 3-26 of column 4).

Regarding claim 2, Danroc discloses that the anode electrode layer comprises a Substrate (20), and the anode comprise a first conductive layer (22) and a second anode conductive layer (24), which wraps the first conductive anode sequentially (lines 27-32 of column 4).

Regarding claim 3, Danroc discloses that the substrate is fabricated from glass material (lines 12-14 of column 3).

Regarding claims 6 & 7, Danroc discloses a dielectric layer (6) formed and patterned on the cathode electrode layer (4) to encompass the cathode (12) therein, and gate electrode (8) is formed on the dielectric (lines 3-5 of column 4).

Regarding claim 11, Danroc discloses a cathode electrode (14) of a field emission display comprising a substrate (2) and a cathode electrode (4, 12) formed on the substrate where the cathode electrode (12) has a center gradually descending towards peripheries thereof (Fig 2-5), and a second conductive layer (36 of Fig 5) formed on top of central region of the first conductive layer (Fig 5).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-5, & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danroc et al. (US 5,828,162).

Regarding claims 4-5 & 17, Danroc discloses that the first conductive material is a transparent conductive material, forming anode, and the second conductive material is phosphor powder (lines 31-32 of column 4) wrapping the transparent anode.

But Danroc is silent about the material used. However, ITO is a well-known suitable material for forming transparent electrode for the display device.

Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to use ITO for the anode in the device of Danroc et al., since selection of known material for known purposes is within the skill of art.

Claims 9,13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danroc et al. as applied to claim 1 above, and further in view of Lee et al. (US 6750604).

Regarding claims 9, 13, Danroc discloses a first conductive layer of the cathode electrode but is silent about the particular material used to form the first conductive material and screen-printing the first conductive layer.

However, in the same field of FED, lee et al. disclose a field emission display cathode having a first conductive layer (80 of Fig 4A-5B) formed of silver paste, and forming the silver paste layer by screen printing (lines 1-7 of column 7) and thus teaches the suitability of silver paste for cathode electrode layer in a filed emission device.

Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply silver paste to form the first conductive layer of the cathode electrode since selection of known material for known purposes is within the skill of art.

Claims 10,14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danroc et al. as applied to claim 1 above, and further in view of Nakashima et al. (US 6940220).

Regarding claims 10 & 14, Danroc discloses that the second conductive layer (36) is fabricated from a metal (lines 27 of column 6), instead of claimed carbon nanotubes.

However, Nakashima et al., in the same field of FED discloses that for the purpose of electron emission materials, carbon nanotubes are widely used as emitters (lines 65 of column 5- line 1 of column 6).

Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to use carbon nanotube instead of a metal layer, in the device of Danroc et al., since selection known materials would be within the level of ordinary skill in the art.

***Allowable Subject Matter***

Claims 16, 18-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 16, the prior art of record neither shows nor suggests a method of fabricating FED, including all the cited limitations of claim 16.

### ***Response to Arguments***

Applicant's arguments with respect to claim have been considered but are moot in view of the amendments of claims. Thus new ground(s) of rejection presented in view of amended claims.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is (571) 272-2452. The examiner can normally be reached on Monday-Friday 8:30 am - 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Karabi Guharay  
Primary Examiner  
Art Unit 2879

10/27/06